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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/236,995	01/26/1999	PRAMOD MAHAJAN	5718-34	9734

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EXAMINER

KATCHEVES, KONSTANTINA T

ART UNIT PAPER NUMBER

1636

DATE MAILED: 09/11/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/236,995

Applicant(s)

MAHAJAN ET AL.

Examiner

Konstantina Katcheves

Art Unit

1636

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15 and 17-33 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claims 1-23 and 24-33 are pending in the present application.

Response to Amendment

The rejections of claims 1-23 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification has been withdrawn in view of Applicant's Amendment and Remarks filed 27 June 2002.

The rejection of claims 1-23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn in view of Applicant's Amendment and Remarks filed 27 June 2002.

The rejection of claim 1 under 35 U.S.C. 102(a) as being anticipated by Accession No. AJ222589 (Babiyachuk et al. 19 November 1997) has been withdrawn in view of Applicant's Amendment and Remarks filed 27 June 2002.

The rejection of claims 1-23 under 35 U.S.C. 103(a) as being unpatentable over Accession No:AJ222589 in view of DeBlock (WO 97/06267) has been withdrawn.

New Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Accession No. AJ222589 (Babiyachuk et al. 19 November 1997) in view of Ikejima et al. al (cited by Applicant). Applicant's arguments filed on 27 June 2002 are addressed below insofar as they apply to the instant rejection.

The invention of the instant claims is drawn to a nucleic acid construct comprising the sequences of SEQ ID Nos:1 or 2.

Accession No. AJ222589 discloses a sequence with 95 percent identity with SEQ ID NO:2 and 97 percent identity with SEQ ID NO:1. AJ222389 is also characterized as a ADP-ribose polymerase molecule. This sequence, however, fails to have the third cysteine residue required for a functional zinc finger domain.

Ikejima et al. teach that the deletion or mutation of the zinc fingers result in the elimination or reduction in ability of a poly-ADP-ribose polymerase to bind DNA.

It would have been obvious at the time the invention was made to modify the sequences claimed such that a third cysteine residue is provided. The classic zinc finger motif of poly-ADP-ribose polymerase comprises Cys-X₂-Cys-X₂₈₋₃₀-His-X₂-Cys. AJ222589 has a valine residue in place of the third cysteine. Although this reference fails to contain a necessary component of the zinc finger motif, the motif was known in the art such that one of skill in the art would have motivated to modify the sequence of AJ222589 so that it would now contain a functional motif. Applicant on page 11 of their response filed 27 June 2002 acknowledges the state of the art. Applicant states: "that as early as 1984, Zahradka and Ebisuzaki demonstrated

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that the classical type poly ADP-ribose polymerase is a metalloenzyme that needs zinc for its activity." Applicant also states that the DNA binding domain was characterized to contain the domain described. Moreover, Applicant cites Ikejima et al. which through a series of experiments involving site-directed mutagenesis of individual amino acids establish the functional relevance of the zinc fingers and teach that deletion or mutation of the classic zinc finger domain eliminates the ability of poly ADP ribose polymerase to bind DNA. This point is punctuated by the confirmation of the zinc finger domain in Babiychuk et al. on page 637 many years later which discusses zap2, containing a functional domain, and zap1, missing the third cysteine and non-functional. Therefore, based upon the recognition that the sequence of AJ222589 is a poly-ADP-ribose polymerase, the state of the art, the fact that the classic zinc finger domain was known before the publication of Ikejima et al., one of skill in the art would have been motivated to modify the arginine in the sequence to a cyteine to provide a functional zinc finger domain and thus a functional polymerase.

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Accession No:AJ222589 and Ikejima et al. as applied to claims 1, 24 and 25 above, and further in view of DeBlock (WO 97/06267).

The invention of the instant claims is drawn to a nucleic acid construct comprising the sequences of SEQ ID Nos:1 or 2 a chimeric gene construct comprising said sequences and transformed plant cells.

Accession No: AJ222589 and Ikejima et al are relied upon as described above. The instant reference fails to disclose a chimeric construct, transformed plant cells or method of transforming plants cells.

De Block discloses a construct comprising a heterologous tissue specific promoter and an inhibitor of plant poly ADP-ribose polymerase that is transformed into both monocotyledonous and dicotyledonous plants. See abstract, pages 1-3 and page 61.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create vector construct comprising a heterologous promoter and a sequence of SEQ ID Nos:1 or 2 encoding a plant poly ADP-ribose polymerase in order to modulate expression of the polymerase and control the metabolism of the plant. De Block teaches a method and construct wherein an inhibitor of plant poly ADP-ribose polymerase is transferred to a cell such that the expression of the polymerase is inhibited and the metabolism of the plant is controlled by a tissue specific promoter. The ordinary skilled artisan would have been motivated by the disclosure of De Block to use the plant poly ADP-ribose polymerase disclosed in Accession No:AJ222589 and Ikejima et al., described above, to modulate plant metabolism. Moreover, it is well within the purview of the ordinary skilled artisan to create novel constructs and transform them into cells such that the ordinary skilled artisan would have a reasonable expectation of success of transforming a cell with a construct comprising plant poly ADP-ribose polymerase. Therefore, absent evidence to the contrary, the invention as a whole would have been *prima facie* obvious to one or ordinary skill in the art at the time the invention was made.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Konstantina Katcheves whose telephone number is (703) 305-1999. The examiner can normally be reached on Monday through Friday 7:30 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel, Ph.D. can be reached on (703) 305-1998. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3014 for regular communications and (703) 305-7939 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3388.

Konstantina Katcheves
September 6, 2002


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